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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,533	11/25/2003	Yuguang Fang	5853-364	5349
30448 7590 05/31/2007 AKERMAN SENTERFITT P.O. BOX 3188 WEST PALM BEACH, FL 33402-3188			EXAMINER TRAN, KHAI	
			ART UNIT 2611	PAPER NUMBER
			MAIL DATE 05/31/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No. 10/721,533	Applicant(s) FANG ET AL.	
	Examiner KHAI TRAN	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-11 is/are allowed.
- 6) ☒ Claim(s) 12-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>3/22/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figures 1-6 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 12-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Borran et al (US 2004/0264585 A1).

Regarding claim 12, Borran et al disclose a method for demodulation in a semi-coherent System, the method comprising the steps of: estimating a magnitude for a

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current received symbol (see [0045]); differentially decoding a phase with a phase of a previous received symbol for a phase of the current received symbol ([0124]); and finding a closest point to the current received symbol with the differentially decoded phase and the estimated magnitude on a predetermined constellation (see [0013]).

Regarding claim 13, Borran et al disclose wherein the method further comprises the step of demodulating a first data symbol with a reference symbol which is a last symbol in a preamble and is known at both a receiver and a transmitter in the system (see [0015] showing the receiver includes a channel estimator for estimating a channel of a multi-carrier system using pilot symbols of a received set of symbols, a demodulator for demodulating at least a portion of the received set of symbols in accordance with a multi-carrier transmission technique, and a de-mapper for converting the demodulated symbols to a plurality of data signals. The data signals, either each individually or groups of them, correspond to a constellation point. The receiver can use $N_{\text{sub.p}}$ pilot symbols within a coherence interval to estimate $N_{\text{sub.t}}$ taps of a multipath channel with a total of L taps, wherein the number $N_{\text{sub.t}}$ is selected to minimize an estimation variance at a frequency bin defined by the multi-carrier modulating scheme).

Claim 14 is similar to claim 12. Therefore, claim 14 is rejected under a similar rationale.

Regarding claim 15, Borran et al disclose a communication system as shown in Figures 1A and 1B, comprising: a receiver (122b) having a combined orthogonal frequency division multiplexing demodulation (141) and a bit-interleaved coding

demodulation scheme (de-interleaver 143); a transmitter (122a) having a combined orthogonal frequency division multiplexing modulation (133) and a bit-interleaved coding modulation scheme (131); a bitmap shared by the receiver and the transmitter providing a predetermined constellation of symbols wherein an amplitude and a differentially encoded phase are used to determine a closest symbols for a current transmitted symbol (a signal constellation 125).

Regarding claims 16-18, Barron et al disclose wherein the bitmap comprises different number of sample points are positioned on different rings and the points on a same ring have a same phase difference, while the phases of points on two consecutive rings are different (see Figures 6A-6F); wherein a phase is differentially encoded with a previous encoded symbol, but an amplitude is not (see [0124]); wherein a channel gain estimation is used to determine the amplitude (see [005]).

Allowable Subject Matter

4. Claims 1-11 are allowed.
5. The following is a statement of reasons for the indication of allowable subject matter: none of the prior art of the record discloses or suggests that A constellation design for a communication system, comprising: a plurality of rings in a constellation, wherein each ring in the plurality of rings has a different radius that is dependent upon a total number of points in the constellation design; a phase difference between two consecutive points on a predetermined ring dependent upon an order of the predetermined ring; a predetermined number of rings dependent upon the total number of points in the constellation design; and a predetermined bit sequence assignment to

the points in the constellation design dependent upon the total number of points in the constellation design.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Mazet et al (US 2006/0239177 A1) disclose a communication unit and method of channel estimation in an OFDM communication system.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHAI TRAN whose telephone number is (571) 272-3019. The examiner can normally be reached on 7:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JAY PATEL can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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A handwritten signature in black ink, appearing to read 'Khai Tran', written in a cursive style.

KHAI TRAN
Primary Examiner
Art Unit 2611

KT
May 24, 2007